

**WHAT IS CLAIMED IS:**

1. A method of load monitoring comprising:  
monitoring an initial state output signal generated by one or more load sensors  
positioned about a load storage device;  
5 monitoring a current state output signal generated by the one or more load sensors;  
and  
comparing the initial and current state output signals to determine changes in a load  
positioned upon the load storage device.

10 2. The method of claim 1 comprising establishing an empty state model for the  
load storage device during an empty state in which the load storage device does not contain  
any load.

15 3. The method of claim 2 further comprising:  
modifying the empty state model to generate a current state model pursuant to  
changes in the load positioned upon the load storage device,  
wherein the current state model defines the load positioned upon the load storage  
device during a loaded state.

20 4. The method of claim 3 further comprising:  
maintaining an item database that includes a definition for one or more items  
potentially included in the load positioned upon the load storage device,  
wherein the definition of each item includes one or more parameters that define the  
item.

25 5. The method of claim 4 wherein the one or more parameters are chosen from  
the group consisting of: item name, item part number, product quantity per item, item  
weight, item height, item width, and item depth.

30 6. The method of claim 4 wherein modifying the empty state model includes  
adding one or more items to the empty state model.

7. The method of claim 4 further comprising updating the current state model pursuant to changes in the load positioned upon the load storage device.

5 8. The method of claim 7 wherein updating the current state model includes adding or removing one or more items to or from the current state model.

9. The method of claim 5 wherein comparing the initial and current state output signals includes determining a net load change in the load positioned upon the load storage  
10 device.

10. The method of claim 9 wherein comparing the initial and current state output signals further includes comparing the determined net load change to the item weight of one or more of the items potentially included in the load.

15 11. The method of claim 10 wherein comparing the initial and current state output signals further includes selecting, from the one or more items potentially included in the load, a chosen item that corresponds to the determined net load change.

20 12. The method of claim 11 further comprising updating a state model to include the chosen item.

13. The method of claim 1 further comprising establishing a current state model for the load storage device during a loaded state of the load storage device.

25 14. The method of claim 13 further comprising updating the current state model pursuant to changes in the load positioned upon the load storage device.

30 15. The method of claim 1 further comprising positioning the load sensors about the load storage device.

16. The method of claim 15 wherein the load storage device is generally rectangular in shape and positioning the load sensors includes positioning one load sensor proximate each corner of the load storage device.

5 17. The method of claim 15 wherein positioning the load sensors includes positioning one or more of the load sensors between the load storage device and the surface upon which the load storage device rests.

10 18. The method of claim 1 wherein the load storage device is chosen from a group consisting of: a pallet; a shelf; a table, a bin, and a shipping container.

19. The computer program product of claim 1 wherein the initial state is an empty state or a loaded state.

15 20. The computer program product of claim 1 wherein the current state is an empty state or a loaded state.

20 21. A computer program product residing on a computer readable medium having a plurality of instructions stored thereon which, when executed by the processor, cause that processor to:

monitor an initial state output signal generated by one or more load sensors positioned about a load storage device;

monitor a current state output signal generated by the one or more load sensors; and

25 compare the initial and current state output signals to determine changes in a load positioned upon the load storage device.

30 22. The computer program product of claim 21 further comprising instructions for establishing an empty state model for the load storage device during an empty state in which the load storage device does not contain any load.

23. The computer program product of claim 22 further comprising instructions for:

modifying the empty state model to generate a current state model pursuant to changes in the load positioned upon the load storage device,

5 wherein the current state model defines the load positioned upon the load storage device during a loaded state

24. The computer program product of claim 23 further comprising instructions for:

10 maintaining an item database that includes a definition for one or more items potentially included in the load positioned upon the load storage device,

wherein the definition of each item includes one or more parameters that define the item.

15 25. The computer program product of claim 24 wherein the instructions for modifying the empty state model include instructions for adding one or more items to the empty state model.

20 26. The computer program product of claim 24 further comprising instructions for updating the current state model pursuant to changes in the load positioned upon the load storage device.

25 27. The computer program product of claim 21 wherein the instructions for comparing the initial and current state output signals include instructions for determining a net load change in the load positioned upon the load storage device.

28. The computer program product of claim 27 wherein the instructions for comparing the initial and current state output signals further include instructions for comparing the determined net load change to an item weight of one or more items potentially  
30 included in the load.

29. The computer program product of claim 28 wherein the instructions for comparing the initial and current state output signals further include instructions for selecting, from the one or more items potentially included in the load, a chosen item that corresponds to the determined net load change.

5

30. The computer program product of claim 21 further comprising instructions for establishing a current state model for the load storage device during a loaded state of the load storage device.

10

31. The computer program product of claim 30 further comprising instructions for updating the current state model pursuant to changes in the load positioned upon the load storage device.

15

32. The computer program product of claim 21 wherein the initial state is an empty state or a loaded state.

33. The computer program product of claim 21 wherein the current state is an empty state or a loaded state.

20

34. A system comprising:  
a plurality of load sensors positioned to measure a load on a surface and operable to output load signals corresponding to the load;  
a database operable to store a plurality of load records, each load record corresponding to an item type; and  
a load monitoring system operable to input the load signals and access the database, to thereby output the item type corresponding to the load, based on the load records.

25

35. The system of claim 34 wherein the load monitoring system is further operable to determine a position of the load, relative to the surface, based on the load signals.

30

36. The system of claim 34 wherein the load monitoring system is further operable to monitor an initial state output signal generated by the load sensors, monitor a current state output signal generated by the load sensors, and compare the initial and current state output signals to determine changes in the load.

5

37. The system of claim 34 wherein the load monitoring system is further operable to recognize an event associated with the load, including an addition to, removal from, or movement on the surface of the load.

10

38. The system of claim 34 wherein the load monitoring system is further operable to determine dimensions of the load.

15